United States
Environmental Protection
Agency

EPA530-R-07-001
April 2007

National Priority Chemicals Trends Report (2000-2004)

Section 4
Chemical Specific Trends Analyses for Priority Chemicals (2000−2004): Hexachloro−1,3−butadiene (HCBD)

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Hexachloro−1,3−butadiene (HCBD)

Chemical Information:

CAS Number − 87−68−3

Alternate Names − HCBD, 1,3−hexachlorobutadiene, perchlorobutadiene

General Uses − This chemical is used to make rubber, as a solvent, to make lubricants, in gyroscopes, as a heat transfer liquid, and as a hydraulic liquid.

Potential Hazards − This chemical is highly toxic; it can be fatal if inhaled, swallowed, or absorbed through the skin.

Summary Analysis:

- NATIONAL: In 2004, approximately 7.9 million pounds of HCBD were reported; this quantity was approximately 30 percent less than the quantity reported in 2000.
- REGIONS/STATES: HCBD was only reported by facilities in EPA Region 6 in 2004, in the states of Louisiana and Texas.
- FACILITIES: Five facilities reported HCBD in 2000−2003; only four facilities reported this chemical in 2004.
- MANAGEMENT: Nearly 100 percent of HCBD was treated (using incineration) in 2004.
- INDUSTRY SECTOR: In 2004, two facilities in SIC 2812 (Alkalies and chlorine) accounted for almost 63 percent of the total quantity of HCBD; one facility in SIC 2869 (Industrial organic chemicals, nec) accounted for approximately 37 percent of the total quantity.

National Trends:

Exhibit 4.95 shows the number of facilities that reported HCBD in 2000 to 2004 and the quantities of this PC that were managed via disposal, treatment, energy recovery, and recycling. Five facilities reported HCBD in 2000−2003; only four facilities reported this chemical in 2004. In 2004, approximately 7.9 million pounds of HCBD were reported; this quantity was approximately 30 percent less than the quantity reported in 2000. For 2000−2002, the quantity of HCBD steadily decreased but then began increasing in 2003.

In 2004, there was an increase of approximately 2.3 million pounds (+41 percent), compared to the quantity reported in 2003. All four facilities that reported HCBD in 2004 showed an increase. Several facilities noted that its increase resulted from increased production. Another facility, located in Louisiana, attributed its increase to improved flow measurement equipment.

Except in 2000, when energy recovery was used to manage almost 2.3 million pounds of HCBD, treatment has been the primary management method; nearly 100 percent of HCBD was treated (using incineration) in 2004. Since 2000, between 220,000 and 340,000 pounds of HCBD were recycled each year.

Exhibit 4.95. National Management Methods for Hexachloro−1,3−butadiene, 2000−2004

Management Methods for HCBD and Number of Facilities	2000 (pounds)	2001 (pounds)	2002 (pounds)	2003 (pounds)	2004 (pounds)	Percent Change (2000−2004)	Management Method− Percent of Quantity of This PC (2004)
Number of Facilities	5	5	5	5	4	-20.0%	-
Disposal Quantity (pounds)	10	563	53	12	88	782.6%	0.0%
Energy Recovery Quantity (pounds)	2,274,214	0	80,570	61,619	0	-100.0%	0.0%
Treatment Quantity (pounds)	9,022,857	6,404,178	5,086,762	5,504,668	7,874,619	-12.7%	100.0%
Priority Chemical Quantity (pounds)	11,297,857	6,404,741	5,167,385	5,566,299	7,874,707	-30.3%	100.0%
Recycling Quantity (pounds)*	250,000	220,000	340,010	300,000	305,279	22.1%	-

*Note: Waste minimization is the emphasis of this Report. As such, we primarily focus on quantities of PCs that are managed via onsite/offsite disposal, treatment, or energy recovery because we believe these PC quantities offer the greatest opportunities for waste minimization. Because recycled quantities of PCs are already directed to their best uses, they are considered separate and distinct from the quantities of PCs not recycled. Throughout this section, the recycled quantity is presented to provide some perspective regarding the quantity of this PC already recycled compared to the quantities that are managed via disposal, treatment, and energy recovery and thus potentially available for waste minimization.

Exhibit 4.96 shows the number of facilities that reported HCBD within various quantity ranges. Of the four facilities that reported HCBD in 2004, three facilities accounted for nearly the entire quantity of this chemical.

Exhibit 4.96. Distribution of Quantities by Facilities Reporting Hexachloro−1,3−butadiene, 2004

HCBD (7,874,707 pounds)		
Quantity Reported	Number of Facilities Reporting This Quantity (2004)	Percent of Total Quantity of This PC (2004)
Up to 10 pounds	0	0.0%
11 − 100 pounds	0	0.0%
101 − 1,000 pounds	0	0.0%
1,001 − 10,000 pounds	1	less than 0.1%
10,001 − 100,000 pounds	0	0.0%
100,001 − 1 million pounds	3	99.9%
> 1 million pounds	0	0.0%

EPA Regional Trends:

HCBD was only reported by facilities in EPA Region 6 in 2004 (Exhibits 4.97 and 4.98). In 2004, the quantity was approximately 30 percent less than the quantity reported in 2000; for 2000−2002, the quantity of HCBD steadily decreased but then began increasing in 2003.

Exhibit 4.97. Regional Quantities of Hexachloro−1,3−butadiene, 2000−2004

EPA Region	2000 (pounds)	2001 (pounds)	2002 (pounds)	2003 (pounds)	2004 (pounds)	Percent Change in Quantity (2000−2004)	Percent of Total Quantity of This PC (2004)
6	11,297,081	6,404,741	5,167,385	5,566,299	7,874,707	−30.3%	100.0%

Exhibit 4.98. Distribution of Facilities Reporting Hexachloro−1,3−butadiene and Hexachloro−1,3−butadiene in 2004 in EPA Region 6

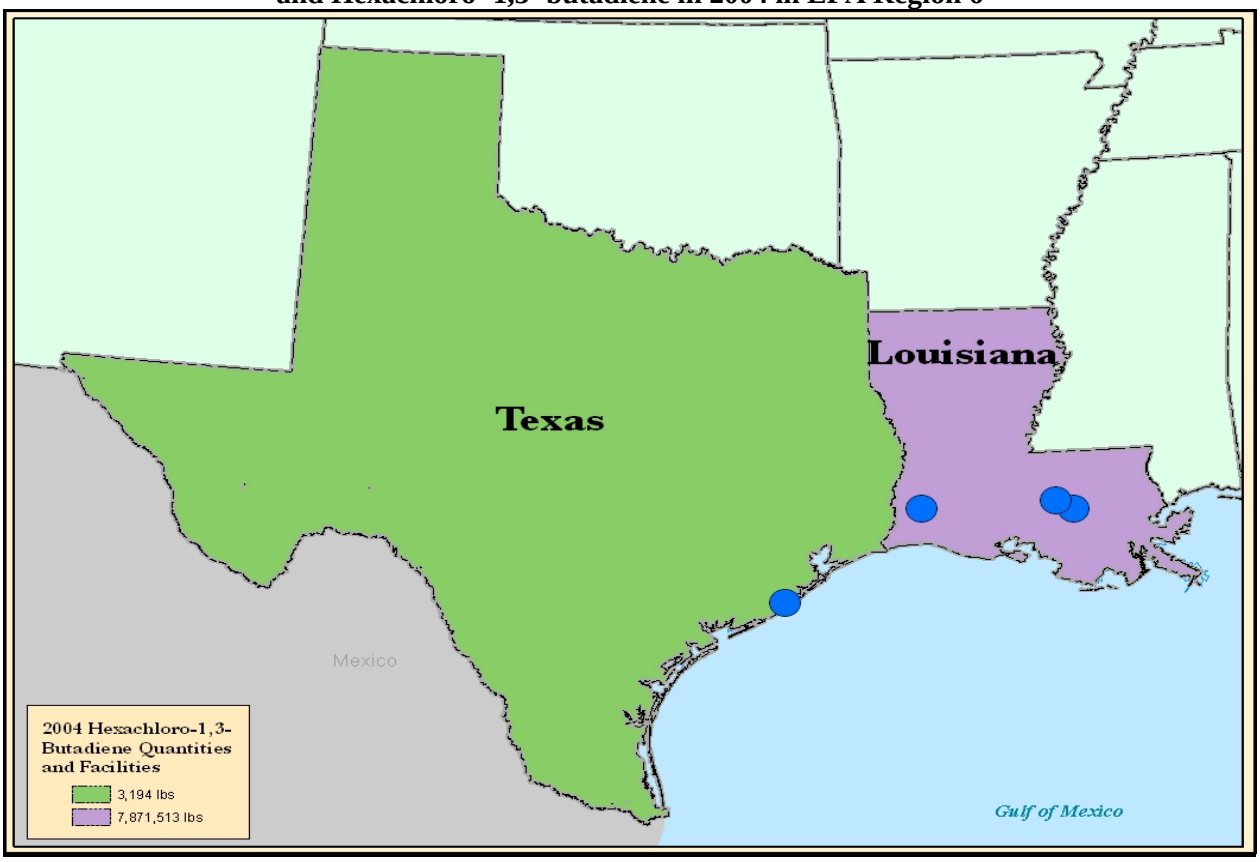


Exhibit 4.99 shows how HCBD was managed by facilities in Region 6, the only region with facilities that reported this chemical in 2004. In 2004, nearly the entire quantity of HCBD was treated (using incineration), mostly onsite. Only a small quantity was land disposed. One facility reported approximately 98 percent of the recycled quantity of HCBD in 2004.

Exhibit 4.99. Management Methods for Hexachloro−1,3−butadiene, by EPA Region, 2004

EPA Region	Quantity (pounds) of HCBD (2004)	Percent of HCBD (2004)	Disposal (pounds)		Energy Recovery (pounds)		Treatment (pounds)		Recycling (pounds)	
			Onsite Disposal	Offsite Disposal	Onsite Energy Recovery	Offsite Energy Recovery	Onsite Treatment	Offsite Treatment	Onsite Recycling	Offsite Recycling
6	7,874,707	100.0%	1	87	0	0	7,864,902	9,717	305,279	0

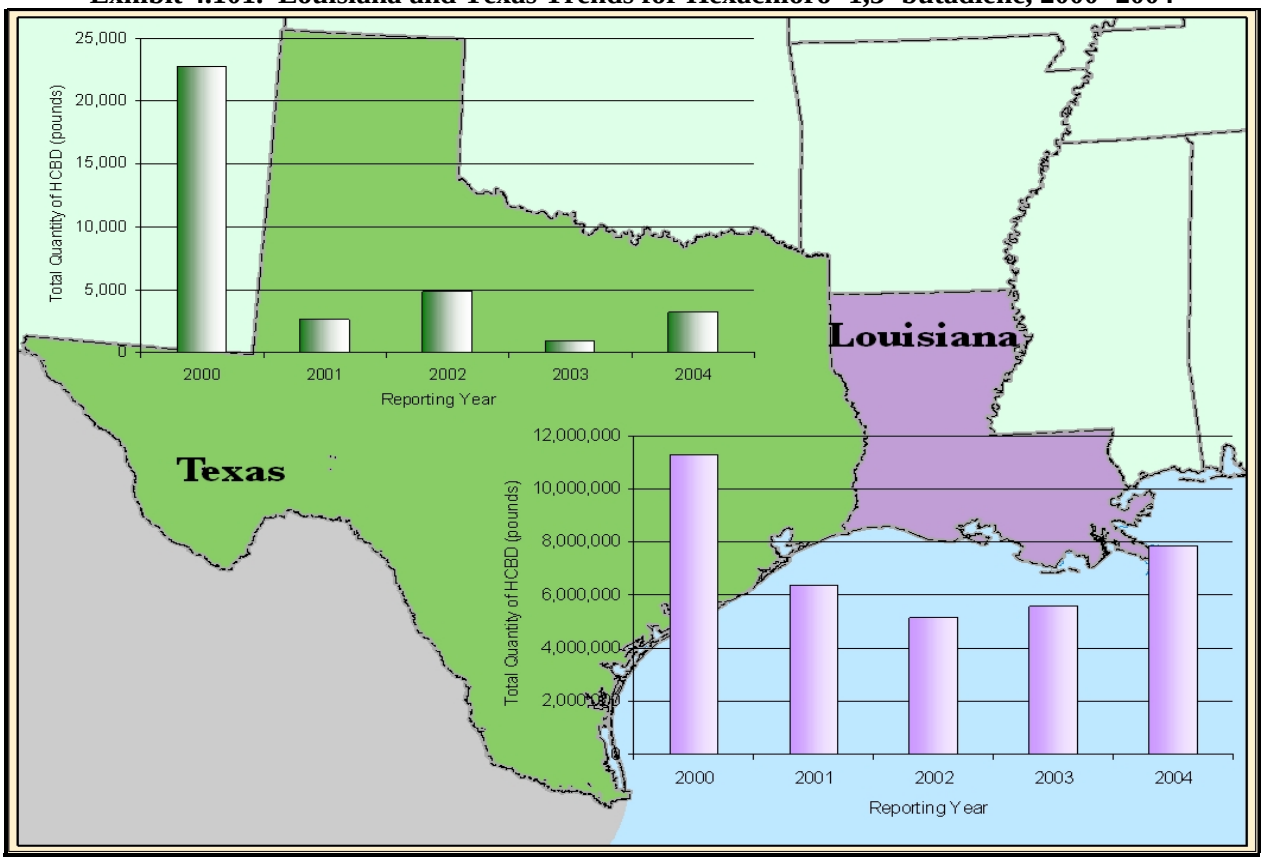
State Trends:

In 2000−2004, facilities in only two states reported a quantity of HCBD (Exhibits 4.100 and 4.101). Facilities in Louisiana accounted for almost 100 percent of the total quantity in 2004, including an increase of approximately 2.3 million pounds, compared to 2003. A facility in Texas reported approximately 23,000 pounds of HCBD in 2000 and has reported significantly less quantities since 2001.

Exhibit 4.100. State Quantity Trends for Hexachloro−1,3−butadiene, Based on Total 2004 Quantity, 2000−2004

State	Total Quantity (pounds) of HCBD					Change in Quantity (2000−2004)	Percent Change in Quantity (2000−2004)	Percent of Total Quantity of This PC (2004)
	2000	2001	2002	2003	2004			
LA	11,274,320	6,402,097	5,162,499	5,565,351	7,871,513	−3,402,807	−30.2%	100.0%
TX	22,761	2,644	4,886	948	3,194	−19,567	−86.0%	0.0%

Exhibit 4.101. Louisiana and Texas Trends for Hexachloro−1,3−butadiene, 2000−2004

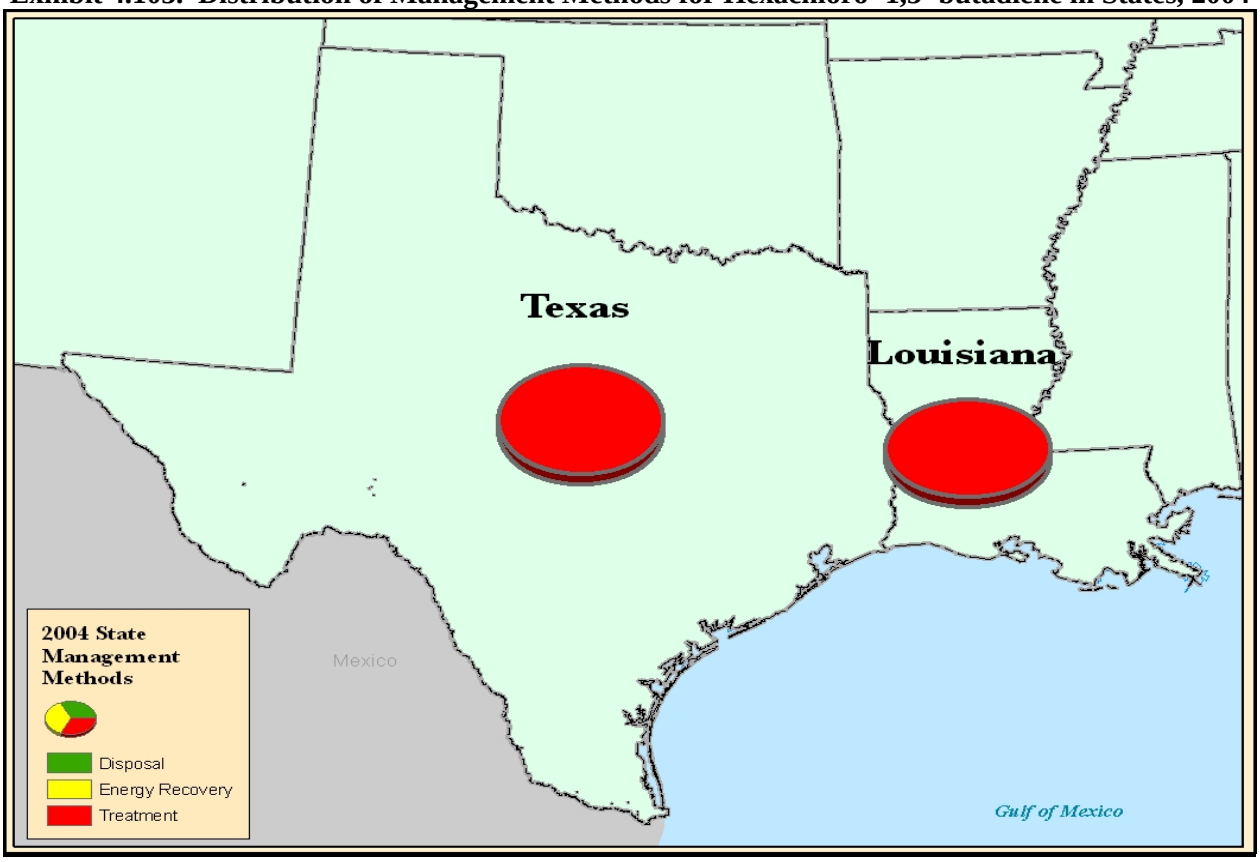


Exhibits 4.102 and 4.103 show how HCBD was managed by facilities in the two states that accounted for 100 percent of the total quantity of this PC in 2003. Approximately 99 percent of the HCBD reported by facilities in Louisiana and Texas was treated onsite. A relatively small quantity was land disposed. A Louisiana facility reported most of the quantity of HCBD recycled in 2004.

Exhibit 4.102. State Management Methods for Hexachloro−1,3−butadiene, Based on Total 2004 Quantity 2004

State	Total Quantity (pounds) of HCBD (2004)	Onsite Disposal (pounds)	Offsite Disposal (pounds)	Onsite Energy Recovery (pounds)	Offsite Energy Recovery (pounds)	Onsite Treatment (pounds)	Offsite Treatment (pounds)	Onsite Recycling (pounds)	Offsite Recycling (pounds)
LA	7,871,513	1	87	0	0	7,864,051	7,374	300,000	0
TX	3,194	0	0	0	0	851	2,343	5,279	0

Exhibit 4.103. Distribution of Management Methods for Hexachloro−1,3−butadiene in States, 2004



Industry Sector (SIC) Trends:

Exhibit 4.104 shows the quantity of HCBD for the four industry sectors in which facilities reported this chemical from 2000−2004. Four facilities in three industry sectors reported HCBD in 2004. Two facilities in SIC 2812 (Alkalies and chlorine) accounted for almost 63 percent of the total quantity of HCBD in 2004. From 2000 to 2003, one of these facilities had reduced its HCBD by approximately 4.5 million pounds. In 2004, however, the quantity doubled from the previous year; the facility attributes this increase to changes in feedstock composition and groundwater remediation.

One facility in SIC 2869 (Industrial organic chemicals, nec) accounted for approximately 37 percent of the HCBD in 2004. From 2000 to 2001, this facility also had reported SIC 2812 as its primary SIC code. Since 2000, this facility reduced its HCBD by almost 3 million pounds; however, in 2004, the facility reported an increase of approximately 1.3 million pounds. This increase was attributed to increased production and improved flow measurement equipment which resulted in the facility using larger volume flow streams in calculating quantities of this PC.

Exhibit 4.104. Industry Sectors Containing Hexachloro−1,3−butadiene, 2000−2004

Primary SIC	SIC Description	Number of Facilities That Reported HCBD (2004)	2000 (pounds)	2001 (pounds)	2002 (pounds)	2003 (pounds)	2004 (pounds)	Change in Quantity (2000−2004)	Percent of Total Quantity of This PC (2004)
2812	Alkalies and chlorine	2	11,273,492	6,338,085	3,515,453	3,925,135	4,962,443	−6,311,049	63.0%
2869*	Industrial organic chemicals, nec	1	0	0	1,571,362	1,578,608	2,909,070	2,909,070	36.9%
2821	Plastics materials and resins	1	0	0	0	948	3,194	3,194	0.0%
2819	Industrial inorganic chemicals, nec	0	23,589	66,656	80,570	61,608	0	−23,589	0.0%

* Note: This facility had reported SIC 2812 as its primary SIC code for 2000−2001.

Exhibit 4.105 shows how HCBD was managed by the four facilities in the three industry sectors that accounted for 100 percent of the total quantity of this chemical in 2004. Almost 100 percent of the HCBD for these facilities was treated onsite, using incineration. One facility in SIC 2812 reported approximately 98 percent of the total quantity recycled in 2004.

Exhibit 4.105. Management Methods for Hexachloro−1,3−butadiene in Industry Sectors, 2004

Primary SIC	SIC Description	Total Quantity (pounds) of HCBD (2004)	Percent of Total Quantity (2004)	Disposal		Energy Recovery		Treatment		Recycling	
				Onsite Disposal (pounds)	Offsite Disposal (pounds)	Onsite Energy Recovery (pounds)	Offsite Energy Recovery (pounds)	Onsite Treatment (pounds)	Offsite Treatment (pounds)	Onsite Recycling (pounds)	Offsite Recycling (pounds)
2812	Alkalies and chlorine	4,962,443	63.0%	1	87	0	0	4,954,981	7,374	300,000	0
2869	Industrial organic chemicals, nec	2,909,070	36.9%	0	0	0	0	2,909,070	0	0	0
2821	Plastics materials and resins	3,194	0.0%	0	0	0	0	851	2,343	5,279	0